# WEST

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## Search Results -

| Terms | Documents |
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| L25 and (request$3 near2 party$1) | 1 |

**Database:**

- US Patents Full-Text Database
- US Pre-Grant Publication Full-Text Database
- JPO Abstracts Database
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- Derwent World Patents Index
- IBM Technical Disclosure Bulletins

**Search:** L26

Refine Search

Recall Text     Clear

## Search History

**DATE:  Monday, August 26, 2002**     Printable Copy     Create Case

| Set Name side by side | Query | Hit Count | Set Name result set |
|---|---|---:|---|
| | *DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR* | | |
| L26 | L25 and (request$3 near2 party$1) | 1 | L26 |
| L25 | L1 and (authenticat$ same identity same request$3 same party$1) | 2 | L25 |
| L24 | L23 and (request$3 near2 party$1) | 0 | L24 |
| L23 | L20 and (prevent$ near2 access$3) | 10 | L23 |
| L22 | L21 and (prevent$ near2 access$3) | 0 | L22 |
| L21 | L20 and (request$ near2 party$1) | 7 | L21 |
| L20 | L1 and authenticat$ | 65 | L20 |
| L19 | L18 and (fail$ same comply$) | 0 | L19 |
| L18 | L13 and (requir$ near2 access$) | 152 | L18 |
| L17 | L16 and (fail$ same comply$) | 0 | L17 |
| L16 | L15 and (requir$ near2 access$) | 13 | L16 |
| L15 | L14 and L1 | 40 | L15 |
| L14 | ((707/$)!.CCLS.) | 15826 | L14 |
| L13 | ((707/9 )!.CCLS. ) | 585 | L13 |
| L12 | L11 and (fail$ same comply$) | 0 | L12 |
| L11 | L10 and (requir$ near2 access$) | 0 | L11 |
| L10 | L9 and L1 | 2 | L10 |
| L9 | (705/74 OR 705/67 OR 705/75).CCLS. | 413 | L9 |
| L8 | L7 and (access$ near2 deny$) | 0 | L8 |
| L7 | L1 and (fail$ same comply$) | 2 | L7 |
| L6 | L3 and (fail$ same comply$) | 0 | L6 |
| L5 | L4 and (fail$ same comply$) | 0 | L5 |
| L4 | L3 and (access$ near2 deny$) | 2 | L4 |
| L3 | L1 and (requir$ near2 access$) | 47 | L3 |
| L2 | L1 and (requir$ same access$) | 210 | L2 |
| L1 | request$ same medical$ same patient$ same (data$2 or record$2 or file$2) | 469 | L1 |

END OF SEARCH HISTORY

# WEST

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## Search Results -

| Terms | Documents |
|-------|-----------|
| L18 and (fail$ same comply$) | 0 |

**Database:**

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**Search:**

L19

| Refine Search |
|---------------|

| Recall Text ⬍ | | Clear |

## Search History

**DATE:   Monday, August 26, 2002**     Printable Copy    Create Case

| Set Name side by side | Query | Hit Count | Set Name result set |
|---|---|---|---|
| | *DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR* | | |
| L19 | L18 and (fail$ same comply$) | 0 | L19 |
| L18 | L13 and (requir$ near2 access$) | 152 | L18 |
| L17 | L16 and (fail$ same comply$) | 0 | L17 |
| L16 | L15 and (requir$ near2 access$) | 13 | L16 |
| L15 | L14 and L1 | 40 | L15 |
| L14 | ((707/$)!.CCLS.) | 15826 | L14 |
| L13 | ((707/9 )!.CCLS. ) | 585 | L13 |
| L12 | L11 and (fail$ same comply$) | 0 | L12 |
| L11 | L10 and (requir$ near2 access$) | 0 | L11 |
| L10 | L9 and L1 | 2 | L10 |
| L9 | (705/74 OR 705/67 OR 705/75).CCLS. | 413 | L9 |
| L8 | L7 and (access$ near2 deny$) | 0 | L8 |
| L7 | L1 and (fail$ same comply$) | 2 | L7 |
| L6 | L3 and (fail$ same comply$) | 0 | L6 |
| L5 | L4 and (fail$ same comply$) | 0 | L5 |
| L4 | L3 and (access$ near2 deny$) | 2 | L4 |
| L3 | L1 and (requir$ near2 access$) | 47 | L3 |
| L2 | L1 and (requir$ same access$) | 210 | L2 |
| L1 | request$ same medical$ same patient$ same (data$2 or record$2 or file$2) | 469 | L1 |

END OF SEARCH HISTORY

## WEST

| Help | Logout | Interrupt |

| Main Menu | Search Form | Posting Counts | Show S Numbers | Edit S Numbers | Preferences | Cases |

### Search Results -

| Terms | Documents |
|---|---|
| L7 and (access$ near2 deny$) | 0 |

**Database:**

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IBM Technical Disclosure Bulletins

**Search:** L8

| Refine Search |

Recall Text    Clear

### Search History

**DATE:   Monday, August 26, 2002**     Printable Copy    Create Case

| Set Name side by side | Query | Hit Count | Set Name result set |
|---|---|---|---|
| | DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=OR | | |
| L8 | L7 and (access$ near2 deny$) | 0 | L8 |
| L7 | L1 and (fail$ same comply$) | 2 | L7 |
| L6 | L3 and (fail$ same comply$) | 0 | L6 |
| L5 | L4 and (fail$ same comply$) | 0 | L5 |
| L4 | L3 and (access$ near2 deny$) | 2 | L4 |
| L3 | L1 and (requir$ near2 access$) | 47 | L3 |
| L2 | L1 and (requir$ same access$) | 210 | L2 |
| L1 | request$ same medical$ same patient$ same (data$2 or record$2 or file$2) | 469 | L1 |

END OF SEARCH HISTORY

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L19: Entry 2 of 6            File: USPT            Aug 7, 2001

DOCUMENT-IDENTIFIER: US 6272468 B1
TITLE: Clinical, heoristic, adminstrative, research & teaching (CHART)
java-web-object information system for medical record management predicated on human
body anatomy and physiology multi-media modeling

Abstract Text (1):
An Internet-based computer system for determining, demonstrating and documenting
human body physiology at all morphological levels and anatomic sites. The system
implements Web-object, multi-media and database technologies to model and record the
variable human body biochemical equilibrium and its physiological and anatomical
manifestations at the genome, cell, tissue, organ and system levels; and the effects
of changes in equilibrium caused by the introduction of foreign chemical substances
via specific anatomic "sites" or "routes of administration". An authorized clinician
user can: access the system via a secure Web page; make a virtual copy of the system
model for a particular patient, research subject or other actual or hypothetical
case; make virtual copies of the case model at medically significant points in time
and/or at the discretion of the clinician; depict the introduction of substance(s)
of specific composition, quantity and concentration via specific human body site(s)
by recording data using input interface(s) representative of the site(s); inspect
the model via anatomic site-specific output interface(s) that demonstrate the
effect(s) of foreign substance(s) in terms of biochemical behaviors and states, and
anatomical and physiological structure and function; and document the chemical
introductions and effects by recording resulting behaviors and states of the case
model automatically, with or without manually recorded supplementary information,
per a typical healthcare industry medical record organization and format. The
patient can access copies of the patient's own model(s) and accompanying medical
record via a secure Web page. Both user types can email model and record instance(s)
with encryption at will.

Parent Case Text (3):
a) (electronic medical record OR computerized patient record OR electronic patient
record) AND (Internet OR Java OR Web OR Web-object): zero (0) matches;
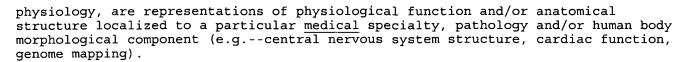
Parent Case Text (4):
b) (electronic medical record OR computerized patient record OR electronic patient
record): two (2) matches with U.S. Pat. Nos. 5,609,161 and 5,452,727; and

Brief Summary Text (3):
The field of application of the invention is "human medicine", wherein there exists
a continuing need to further understand and demonstrate the human body biochemical
reactions and resultant physiological functions for a variety of urgent purposes, as
summarized in the expansion of the CHART System name. "Chart", the term commonly
used by clinical practitioners and other healthcare delivery organization staff to
refer to a patient's medical record in its typical paper/hard-copy form, is used
herein as an acronym (devised by the inventor of the instant application) to
designate the principal areas of medical and healthcare activity--clinical,
heuristic, administrative, research and teaching--on which the subject of the
instant application is designed to have facilitating otherwise beneficial affects.

Brief Summary Text (6):
A non-exhaustive review of the medical informatics literature and the patent file
search described above reveals that a major category of the related technology,
embracing a preponderance of existing computer-based representations of human

physiology, are representations of physiological function and/or anatomical structure localized to a particular medical specialty, pathology and/or human body morphological component (e.g.--central nervous system structure, cardiac function, genome mapping).

Brief Summary Text (8):
A third category of medical computer systems is called the "electronic medical record" (EMR) or "computer-based patient record" (CPR)--the principal focus of attention during the past two decades, primarily through the efforts of the Computer-based Patient Record Institute (CPRI). Systems in this category address the issues of medical record content, utility and confidentiality in an effort to define, design and develop a computer-based "chart", the common practice name for the paper-based medical record as defined above. The principal purpose of the computer-based chart is to make patient-specific information available to clinicians when and where it is needed in order to facilitate more efficient, effective and (therefore) economical pathology diagnosis and treatment, and ongoing patient care including clinical monitoring.

Brief Summary Text (10):
The CHART System (herein after referred to as "the System"), which is the subject of the instant application, features secure but generally available access via any Internet-based World Wide Web (a/k/a "the Web") connection to a real-time interactive physiological model of the human body and associated computer-based patient record to provide capabilities of four types.

Brief Summary Text (12):
2) The System includes features and functions for the establishment and maintenance of a medical chart used to described the physiological information determined and demonstrated by the companion instance of the human body mode.

Brief Summary Text (14):
4) The System provides an integrated email facility for communication of model and/or medical record information, at the discretion of the user, to any holder of a currently active email account; this facility enables the user to attach designated information to an email message using the currently acceptable degree of data encryption (e.g.--at the date of the instant application submission, 124-bit "PSGP" encryption).

Brief Summary Text (21):
In response to appropriate application of these tools to record biochemical, nutrient, toxin or other "foreign substance" input to the System model at one or more sites of introduction/absorption, the System determines and then demonstrates in real time the resulting effects on the instantiated model at any/all other anatomic sites for which user interfaces are provided (planned to include all clinically useful or significant sites of physical examination, test application and specima collection.

Brief Summary Text (23):
Notwithstanding their broad scope, ready accessibility and rich content, the CHART System features/functions are intended to serve only as medical education and clinical decision support aides to licensed clinician users in their diagnostic, therapeutic and patient care activities. The CHART System purpose is neither to preempt nor to minimize the professional participation and responsibility of the licensed clinical user in the diagnostic, therapeutic and care processes; but, rather, to maximize the economy, efficiency and effectiveness of these processes (and, consequently, the clinician's availability of time for other medical/clinical purposes). This maximization is achieved principally as a result of the complete, accurate and timely management of anatomical and physiological information by the System with minimal effort by the clinician.

Brief Summary Text (24):
In addition, the CHART System can provide patients with secure, read-only Web access to their personal medical information; and both clinicians and patients can authorize access by anyone anywhere to System features, functions and information, up to and including the extent of access privileges held by the authorizing

clinician or patient. However, although accessibility to all CHART System features/functions is potentially as ubiquitous as the Internet; nevertheless, System access can be limited even at the individual user level, using generally available information technology and generally accepted standards and practices for its application, consistent with prevailing laws and regulations.

Brief Summary Text (28):
The features/functions of the foregoing example of the System human body model conform to the behaviors/methods and states/properties of human biochemistry and physiology, to the extent that they are identified and described in the current authoritative medical literature and implemented in the System. The System is programmed using a robust, interoperable (i.e.--capable of running on any computing platform) and generally accepted OOP language with development and runtime environments (e.g.--Java, including a language compiler and the Java Virtual Machine). The OOP language defines the "chartSystem package", including the "humanBody" and "medicalRecord" abstract classes, using "components", "objects" and "interfaces" to model the biochemical physiological workings of the body at all anatomic levels--intracellular to whole body.

Brief Summary Text (29):
The CHART System incorporates graphical user interfaces, object-oriented user interfaces and object-oriented programming best practices, implemented in compliance with the Distributed Component and Object Model, the Common Object Request Broker Architecture and other current and applicable industry standards for Web-object system design and development. The System software operates on dedicated Web-based "server" systems and any Internet-connected "client" system (typically a personal computer (PC) configured with "Web browser" software). The clinician or patient user accesses the System's human body model, medical record and other facilities via any client system using the intuitive, easy-to-use, flexible and robust interactive information management user interfaces that are included to define, explore or update an "instantiated" model.

Drawing Description Text (5):
2) medicalRecord Abstract Class Inheritance Hierarchy, a schematic of the "class" definition and "messaging" design approach for the System medical record object classes (FIG. A2);

Drawing Description Text (6):
B) Hardware and Software Element Configuration--a schematic showing the relationship and interaction of the System hardware and software elements, pertinent to the operation of both the physiology model and the medical record; and

Drawing Description Text (7):
C) Software Classes, Methods, Components and Interfaces--a schematic showing the relationship and interaction of software "classes", "components", "objects", "interfaces" and "files", pertinent to the operation of both the physiology and the medical record models.

Detailed Description Text (2):
N.B.--Notations in brackets, [ ], refer to specific items in FIG. A, chartSystem Package Hierarchies, including FIG. A1, humanBody Abstract Class, and FIG. A2, medicalRecord Abstract Class; FIG. B, Hardware and Software Element Configuration; and FIG. C, Software Classes, Methods, Components and Interfaces, all of which are included as an integral part of the instant application. Any personal computer (PC) screen display generated by Web site software is herein after referred to in Web terminology as a "page".

Detailed Description Text (12):
5.1.1 the System instantiates the human physiology model, a/k/a "the humanBody" class [A-1, in toto], and the electronic medical record, a/k/a "medicalRecord" class [A-2 in toto] via the presentation component [C-0], the new case component [C-1] and the database read/write component [C-5],

Detailed Description Text (13):
5.1.2. the System requests from the user the minimum required property/state values

for a valid instantiation (e.g.--for the medicalRecord, patient identification and demographic data; for the humanBody, patient anatomical and physiological baseline data);

Detailed Description Text (14):
5.2. if the specified case (i.e.--combination of humanBody and medicalRecord instantiations) does exist, then the System opens and locks those instantiations.

Detailed Description Text (16):
6.1. the specified instantiations of the humanBody and medicalRecord classes via the presentation component [C-0], the humanBody and medicalRecord user interfaces [C-2, C-11], the humanBody and medicalRecord user interface components [C-3, C-12], the humanBody and medicalRecord database management components [C-4, C-9], the database read/write component [C-5] and the humanBody class [B-10] and medicalRecord class [B-11] in the CHART System database [B-12/C-10];

Detailed Description Text (19):
6.4. the System responds to user entry/input with a variety of OOP features and functions limited by user authorization and and/or the purpose/target of the current user session--humanBody or medicalRecord.

Detailed Description Text (20):
7. To interact with the specified humanBody and medicalRecord class instantiations, the user:

Detailed Description Text (21):
7.71 toggles between the humanBody and medicalRecord instantiations, as needed, via the System Web site pages [B-4, B-3] controlled by the presentation component [C-0], the user interfaces [C-2, C-11], the user interface components [C-3, C-11], the database management components [C-4, C-9], the database read/write component [C-5] and the database [B-12/C-10];

Detailed Description Text (22):
7.2. navigates within the specified instance of the medicalRecord [B-11, B-12] using the System software [B-9, B-12, C-10], which implements the medicalRecord abstract class of objects [A-2, B-11] that loads and executes [B-8] on the System server [B-7] and reads, writes, modifies and/or archives the selected instance of the medicalRecord via the presentation component [C-1], the medicalRecord interfaces [C-11], medicalRecord user interface component [C-12], the medicalRecord database management object [C-9], the database read/write component [C-5] and the database [B-12/C-10];

Detailed Description Text (24):
7.4. uses the System as appropriate to determine, using the humanBody class [B-10, C-4]; to demonstrate, using the humanBody class [B-10, C-0, C-2, C-3, C-4, C-5, C-10] and the Internet/Web site access components [B-7, B-13, B-14, B-15, B-16, C-0, C-11, C-7, C-8]; to document, using the medicalRecord class [B-11, C-0, C-11, C-12, C-9, C-5, C-10]; and to distribute, using the email access facility [B-17, C-0, C-13, C-8] data and information about the physiological state of the case represented by the selected humanBody and medicalRecord class instantiation, examples of which are detailed in step 8, below.

Detailed Description Text (25):
8. To use the System for its intended purpose, the user provides records data input to a selected instantiation of the humanBody class and its associated medicalRecord class, the System operates on the input data, and the user observes the output data and interprets and records it as follows:

Detailed Description Text (34):
8.4.2. observing, optionally, correlate anatomic manifestations of the site behavior and state data and/or studies medical implications of behavior and state data using multi-media information maintained at other Internet/Web sites (e.g.--MicroMedex, Harrison's On-line, ADAM, Ovid, DXplain) that are accessed by user input of appropriate universal resource locator(s) (URLs) or by browsing to site(s) [B-13, B-14, B-15, B-16, C-7] for which URL(s) are programmed in and automatically

activated by the System, according to the selected output OOUI [C-2, C-3];

Detailed Description Text (35):
8.5. the user specifies, optionally, instantiation of the input, processing and output to create a permanent record of the current use of the System, in response to which the System:

Detailed Description Text (37):
8.5.2. records selected or previously specified data reflecting the new instantiation of the humanBody class in the medicalRecord instantiation [A2] for the specified case [B-3, B-8, B-9, B-11, B-12] by identifying anatomic sites [C-0, C-2, C-3] for which the associated method/behavior and property/state data [C-4, C-5, C-10] are automatically written to the appropriate locations in the single instantiation of the medicalRecord related to the specified case [C-9, C-5, C-10] consistent with current law and regulation for medical record update and maintenance (e.g.--including "authentication" information, preserving previously current information in read-only mode).

Detailed Description Text (38):
8.6. the user sends email [B-17], with/without excerpts from the user-specific instance of the humanBody and/or medicalRecord as encrypted attachment(s) [C-0, C-3, C-12, C-13], to communicate the selected information to any email addressee deemed appropriate by the user (patient or clinician) for medical consultation, for third-party payor approval or reimbursement, or for social/lay communication with any specified email address(es).

Current US Original Classification (1):
705/2

CLAIMS:

1. A Web-object computer system hardware and software architecture for real-time human body physiology modeling and medical record-keeping named the Clinical, Heuristic, Administrative, Research & Teaching (CHART) System, which is an application of the following industry-standard information technology hardware components, object-oriented programming (OOP) scripts, OOP class and interface definitions and object-oriented user interfaces (OOUIs), the broad, physiologically comprehensive scope of which and real-time interoperability throughout are unique to the instant application:

a) a client system (i.e.--any personal computer (PC) configured for multi-media support and Internet access) to be used for:

i) access to the System Web site,

ii) input of data describing site-/route-specific introduction/administration of foreign substances,

iii) multi-media display of information describing the biochemical, physiological and anatomical state(s) of the human body at specific site(s), and

iv) access to related Internet sites as/if required;

b) a Web server system array (i.e.--two or more dynamically allocated Internet-accessible computer systems, the configuration of which is typified by that provided maintained at an Internet service provider (ISP) "server farm"), including:

i) a hardware and software platform for operation of the CHART System Web site,

ii) management on intercommunicating random access data storage device(s) (e.g.--a "RAID") of the CHART System software (i.e.--the chartSystem Package of object classes, the OOP language virtual machine, integrated development environment (IDE) with which the CHART System is maintained and modified, and instantiations of the humanBody and the medicalRecord abstract classes as created and maintained by CHART

System users),

iii) management of multiple, concurrent CHART System user activities including secure sign-on, and download and operation of the CHART System OOUIs to the user-operated client system(s),

iv) operation of the CHART System software and/or control of the distributed operation of CHART System software on other Internet-accessible servers:

a) to process input to the selected instantiations of the humanBody and/or medicalRecord classes,

b) to display the biochemical and physiological behaviors and states of the user-selected site(s) of the target class instantiation(s),

c) to update selected instantiation(s) of the humanBody and medicalRecord classes, per user direction, and

d) to launch browser software for automatic or user-directed access to selected Internet sites not a part of the instant application but useful for further anatomic and/or physiological demonstration of CHART System class instance output.

2. An object-oriented programming (OOP) "package" of classes with included methods and properties--implemented using components, objects, messages, object interfaces, scripts and object-oriented user interfaces (OOUIs) including third-party software "controls"--all of which are programmed and executed per the architecture of claim 1 of the instant application in a manner that is unique by virtue of its comprehensive scope and real-time interoperability, as follows:

a) clinically intuitive OOUIs for:

i) input of foreign substance introduction/administration data including drop-down windows for:

a) site/route (e.g.--intramuscular),

b) substance (e.g.--insulin),

c) form (e.g.--liquid/injectable),

d) concentration (e.g.--x milligrams per milliliter),

e) quantity (e.g.--y milliliters),

f) frequency (e.g.--bid/twice daily);

ii) output of site-/class-specific status/state information in biochemical terms with multi-media enhancement, implemented by coded linns to other Internet/Web sites that are professionally maintained and publicly accessible(e.g.--Digitalis active ingredient levels in heart muscle, linked to audio-visual depiction of heart function under specified biochemical conditions from the ADAM Web site);

iii) management of patient-/case-specific instantiations of the humanBody abstract class and the medicalRecord abstract class including:

a) creation of a new instance, requiring user input of data describing the new subject in medical history and physical examination terms (i.e.--demographics, sex, age, weight, health status and other parameters having empirical significance for the execution of humanBody modeling capabilities such as metabolic equilibrium, pharmacological calculation, hormone balance, etc.),

b) modification of an existing instantiation or, optionally, creation of an additional instantiation of the humanBody class with changed properties/states for the same case subject as a means for retaining a model of the current/atypical/diseased/remarkable condition of the same subject,

c) automatic update of medicalRecord class instance with output from the related humanBody instance(s) at the direction of but without manual data entry by the user,

d) archiving of humanBody class and medicalRecord class instance data to random- or limited-access media (e.g.--hard disk, magnetic tape, CD-ROM, etc.);

b) OOP (sub-/super-)classes, components and component interfaces that:

i) describe the human body at each and every anatomic level--sub-nuclear/organelle/genome, cell, tissue, organ, system, body--including for each class:

a) biochemical states/properties in terms appropriate to the anatomical-physiological target (e.g.--concentration of sodium (NA+) and potassium (K+) ions within and immediately without a neuron, and the local concentration of acetylcholine (ACH)),

b) physiological behaviors/methods that occur in the target anatomical structure (e.g.--the adenylate cylcase-/cAMP-generating system in neurons),

c) physiology transport mechanisms pertinent to the anatomical/physiological target (e.g.--the ACH channel mechanism for controlling the passage of N+ and K+ ions to/from the immediately proximal interstitial fluid (ISF), a/k/a the "sodium-potassium pump");

ii) utilize OOP features/functions/tools in a manner that emulates the differential anatomical structures and physiological functions, including:

a) "encapsulation", to hide the methods/behaviors of a structure in the confines of that structure,

b) "inheritance", to include the methods/behaviors and properties/states of structures defined at higher levels of the humanBody abstract class hierarchy, which represent the simpler and more physiologically fundamental and pervasive structures and functions occur at the higher hierarchical levels,

c) "polymorphism", to obtain a wide variation among fundamentally equal structures by the combination of:

(1) encapsulation for data hiding,

(2) addition of specialized methods/behaviors and properties/states at various morphological levels to implement level-specific uniqueness, and

(3) message "overloading" to trigger class-specific differential method execution and property transformation through common method naming;

iii) apply the user input state values to the selected OOUI methods and properties of the specified instantiation of the humanBody abstract class, implementing all messages and targeted methods immediately and concurrently to:

a) determine the new equilibrium state of the humanBody instance at large with acceptable response time, and

b) demonstrate a user-specified subset thereof on demand:

(1) via the appropriate OOUI, and/or

(2) employing other servers located in the ISP server farm or remotely, via the Internet, as/if requested by the user or directed by the System design.